ERROR DETECTED SUGGESTED CORRECTION

ATTN	: NEW RULES CASES: F	PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE										
1	Wrapped Nucleics	The number/text at the end of each line "wrapped" down to the next line.										
	. , ,	This may occur if your file was retrieved in a word processor after creating it.										
		Please adjust your right margin to .3, as this will prevent "wrapping".										
2	Wrapped Aminos	The amino acid-number/text at the end of each line "wrapped " down to the next line.										
-		This may occur if your file was retrieved in a word processor after creating it.										
		Please adjust your right margin to .3, as this will prevent "wrapping".										
3 	Incorrect Line Length	The rules require that a line not exceed 72 characters in length. This includes spaces.										
	Minelianed Amine Apid	The numbering under each 5th amino acid is misaligned. This may be caused by the use of tabs										
٠ <u> </u>	Misaligned Amino Acid Numbering	between the numbering. It is recommended to delete any tabs and use spacing between the numbers.										
5	Non-ASCII	This file was not saved in ASCII (DOS) text, as required by the Sequence Rules.										
		Please ensure your subsequent submission is saved in ASCII text so that it can be processed.										
6	Variable Length	Sequence(s) contain n's or Xaa's which represented more than one residue.										
		As per the rules, each n or Xaa can only represent a single residue.										
		Please present the maximum number of each residue having variable length and										
		indicate in the (ix) feature section that some may be missing.										
7	Patentin ver. 2.0 "bug"	A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid										
		sequence(s) Normally, Patentin would automatically generate this section from the										
		previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section										
		to the subsequent amino acid sequence. This applies primarily to the mandatory <220>-<223>										
		sections for Artificial or Unknown sequences.										
8	Skipped Sequences	Sequence(s) missing. If intentional, please use the following format for each skipped sequence:										
	(OLD RULES)	(2) INFORMATION FOR SEQ ID NO:X:										
		(i) SEQUENCE CHARACTERISTICS:(Do not insert any headings under "SEQUENCE CHARACTERISTICS")										
		(xi) SEQUENCE DESCRIPTION:SEQ ID NO:X:										
		This sequence is intentionally skipped										
		Please also adjust the "(iii) NUMBER OF SEQUENCES:" response to include the skipped sequence(s).										
9	Skipped Sequences	Sequence(s) missing. If intentional, please use the following format for each skipped sequence.										
	(NEW RULES)	<210> sequence id number										
		\$400> sequence id number										
		000										
0	Use of n's or Xaa's	Use of n's and/or Xaa's have been detected in the Sequence Listing.										
	(NEW RULES)	Use of <220> to <223> is MANDATORY if n's or Xaa's are present.										
		In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.										
1	Use of <213>Organism	Sequence(s) are missing this mandatory field or its response.										
	(NEW RULES)											
2	Use of <220>Feature	Sequence(s) are missing the <220>Feature and associated headings.										
	(NEW RULES)	Use of <220> to <223> is MANDATORY if <213>ORGANISM is "Artificial" or "Unknown"										
	•	Please explain source of genetic material in <220> to <223> section.										
		(See "Federal Register," 6/01/98, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of new Rules)										
3	Patentin ver. 2.0 "bug"	Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted										
	Dimension !	Tite Testiting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing).										

Instead, please use "File Manager" or any other means to copy file to floppy disk.

1643

RAW SEQUENCE LISTING DATE: 11/16/2000 PATENT APPLICATION: US/09/486,625 TIME: 16:24:01 Does Not Comply Input Set : A:\PTO.txt Output Set: N:\CRF3\11162000\1486625.raw Corrected Diskette Needed 3 <110> APPLICANT: Ayyavoo, Velpandi Nagashunmugam, Thandavarayan Weiner, David B. enor of Thouslow University of Pennsylvania 9 <120> TITLE OF INVENTION: ATTENUATED VIF DNA IMMUNIZATION CASSETTES FOR GENETIC 1.0 VACCINES 12 <130> FILE REFERENCE: UPAP-0263 14 <140> CURRENT APPLICATION NUMBER: US/09/486,625 15 <141> CURRENT FILING DATE: 2000-09-13 17 <160> NUMBER OF SEQ 1D NOS: 46 19 <170> SOFTWARE: Patentin Ver. 2.0

ERRORED SEQUENCES

21 <210> SEQ ID NO: 1 22 <211> LENGTH: 190 23 <212> TYPE: PRT 24 <213> ORGANISM: Artificial Sequence 26 <220> FEATURE: lgied ameno Trumbers. See item 4 on Evon Jumnour Sheet. (global eva) 27 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 29 <100> SEQUENCE: 1 30 Met Glu Asn Arg Trp Glp Val Met ile Val Trp Gln Val Asp Arg Met
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Input Set : A:\PTO.txt Output Set: N:\CRF3\11162000\1486625.raw E--> 65 160 67 Lou Pro Ser Val Arg Lys Lou Thr Glu Asp Arg Trp Asn Lys Pro Cln E--> 68 E--> 69 175 71 Lys Thr Lys Gly His Arg Gly Ser His Thr Mot Asn Gly His E--> 72 180 E--> 73 190 98 <210> SEQ ID NO: 4 99 <211> LENGTH: 190 100 <212> TYPE: PRT 101 <213> ORGANISM: Artificial Sequence 103 <220> FEATURE: 104 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 106 <400> SEQUENCE: 4 107 Met Glu Asn Arg Trp Gln Val Ile Ile Val Trp Gln Val Asp Arg Het 45 June 1 E--> 108 E--> 109 15 111 Arg Ile Arg Thr Trp Asn Ser Leu Val Lys Tyr His Met Tyr Ser Lys E--> 112 E--> 113 30 115 Lys Ala Arg Glu Trp Phe Tyr His His Tyr Gln Ser Pro His Pro Lys E--> 116 35 118 Val Ser Ser Glu Val His Ile Pro Leu Glu Asp Ala Arg Leu Glu Ile E--> 119 50 55 121 Thr Ser Phe Trp Gly Leu His Thr Gly Glu Arg Asp Trp His Leu Gly E--> 122 65 70 E--> 123 80 125 Gln Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr His Val E--> 126 85 E--> 127 95 129 Asp Pro Asp Leu Ala Asp Gln Leu Tle His Leu Tyr Tyr Phe Asp Cys E--> 130 E--> 131 110 133 Phe Ser Glu Ser Ala lle Arg Lys Ala lle Leu Gly His Arg Val Ser E--> 134 115 120 125 136 Pro Arg Cys Glu Tyr Arg Ala Cly His Ser Lys Val Cly Ser Leu Gln E--> 137 130 135 139 Tyr Leu Ala Ile Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys Pro Pro E--> 140 145 150 E--> 141 160 143 Leu Ala Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys Pro Gln E--> 144 165 E--> 145 175 147 Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His

DATE: 11/16/2000

TIME: 16:24:01

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/486,625

E--> 148 E--> 149 190

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    165 Arg Ile Arg Thr Trp Asn Ser Leu Val Lys Tyr His Met Tyr Arg Ser
E--> 166
                             20
E--> 167 30
    169 Lys Lys Ala Arg Glu Trp Phe Tyr Arg His His Tyr Gln Ser Pro His
E--> 170 35
    172 Pro Arg Val Ser Ser Glu Val His 11e Pro Leu Glu Asp Ala Arg Leu
  -> 173
               50
                                              55
    175 Glu Ile Thr Thr Tyr Trp Gly Leu His Thr Gly Glu Arg Asp Trp His
E--> 176 65
E--> 177 80
    179 Leu Gly Gln Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr
E--> 180
E--> 181 95
    183 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Ile His Leu Tyr Tyr Phe
E--> 184
                           100
                                                           105
E--> 185 110
    187 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly His Arg
                                                                               125
E--> 188
              115
                                                  120
    190 Val Ser Pro Arg Cys Glu Tyr Arg Ala Gly His Ser Lys Val Gly Ser
E--> 191 130
                                                                          140
                                            135
    193 Leu Gln Tyr Leu Ala Ile Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys
E--> 194 145
                                     150
E--> 195 160
    197 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys
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E--> 199 175
    201 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His
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E--> 215
E--> 216 15
    218 Arg Lie Arg Thr Trp Asn Ser Leu Val Lys Tyr His Met Tyr Arg Ser
E--> 219
                           20
                                                           25
E--> 220 30
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same

45

same

 RAW SEQUENCE LISTING
 DATE: 1:/16/2000

 PATENT APPLICATION: US/09/486,625
 TIME: 16:24:01

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

222 Lys Lys Ala Arg Glu Trp Phe Tyr Arg His His Tyr Gln Ser Pro His E--> 223 35 225 Pro Lys Val Ser Ser Glu Val His lle Pro Leu Glu Asp Ala Arg Leu E--> 226 50 55 60 same 228 Glu Fhr Thr Thr Tyr Trp Gly Leu His Thr Gly Glu Arg Asp Trp His 65 E--> 229 E--> 230 80 232 Leu Gly Gln Gly Val Ser 1le Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 233 E--> 234 95 236 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu lle His Leu Tyr Tyr Phe E--> 237 100 105 240 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly His Arg 125 E--> 241 115 243 Val Ser Pro Arg Cys Glu Tyr Arg Ala Gly His Ser Lys Val Gly Ser E--> 244 130 135 140 246 Leu Gln Tyr Leu Ala Ile Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 247 145 150 E--> 248 160 250 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 251 E--> 252 175 254 Pro Gin Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 255 180 258 <210> SEQ ID NO: 7 259 <211> LENGTH: 192 260 <212> TYPE: PRT Jane 261 <213> ORGANISM: Artificial Sequence 263 <220> FEATURE: 264 <223> Office Information: Description of Artificial Sequence: Novel Sequence 266 <400> SEQUENCE: 7 267 Met Glu Asn Arg Trp Gln Val Met 11e Val Trp Gln Val Asp Arg Met E--> 268 E--> 269 15 271 Arg Ile Arg Thr Trp Asn Ser Leu Val Thr Tyr His Met Tyr Arg Ser E--> 272 20 E--> 273 30 275 Gln Lys Ala Arg Glu Trp Phe Asn Arg His His Tyr His Ser Pro His 40 45 35 278 Pro Lys Val Ser Ser Glu Val His Ile Pro Leu Glu Asp Ala Arg Leu E--> 279 50 55 50 281 Ala Ile Pro Thr Phe Trp Gly Leu His Thr Gly Glu Arg Asp Trp His E--> 282 65 70 E--> 283 80 285 Leu Gly Gln Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 286 E--> 287 95

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

289 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu 11e His Leu Tyr Tyr Phe E--> 290 100 E--> 291 110 293 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Le. Gly His Arg 125 115 296 Val Ser Pro Arg Cys Clu Tyr Arg Ala Cly His Ser Lys Val Cly Ser E--> 297 130 140 135 299 Leu Gln Tyr Leu Ala fle Ala Ala Leu Ile Thr Pro Lys Lys fle Lys E--> 300 145 150 E--> 301 160 303 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 304 165 170 307 Pro Gin Lys Thr Lys Glv His Arg Gly Ser His Thr Met Asn Gly His E--> 308 180 E--> 309 190 311 <210> SEQ 1D NO: 8 312 <211> LENGTH: 192 313 <212> TYPE: PRT 314 <213> ORGANISM: Artificial Sequence 316 <220> FEATURE: 317 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 319 <400> SEQUENCE: 8 320 Met Glu Asn Arg Trp Gln Val Met Ile Val Trp Gln Val Asp Arg Met

same

E--> 321 1 324 Arg Ile Arg Thr Trp Asn Ser Leu Val Lys Tyr His Met Tyr Arg Ser E--> 325 20 E--> 326 30 328 Lys Lys Ala Arg Glu Trp Phe Tyr Arg His His Tyr Gln Ser Pro His 331 Pro Lys Val Ser Ser Glu Val His Ile Pro Leu Glu Asp Ala Arg Leu 60 E--> 332 50 5.5 334 Glu Ile Thr Thr Trp Gly Leu His Thr Gly Glu Arg Asp Trp His E--> 335 65 E--> 336 80 338 Leu Gly Gln Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 339 85 342 His Val Asp Pro Asp Leu Ala Asp His Leu Ile His Leu Cys Tyr Phe E--> 343 100 E--> 344 110

346 Asp Cys Leu Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly His Arg

349 Val Ser Pro Arg Cys Glu Tyr Arg Ala Gly His Ser Lys Val Gly Ser

352 Leu Gln Tyr Leu Ala 11e Ala Ala Leu Ile Thr Pro Lys Lys 11e Lys

150

135

Jame

125

140

E--> 347 115

E--> 350 130

E--> 353 145

E--> 354 160

DATE: 11/16/2000 TIME: 16:24:01 RAW SEQUENCE LISTING PATENT APPLICATION: US/09/486,625 Input Set : A:\PTO.txt Output Sct: N:\CRF3\11162000\1486625.raw 356 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu asp Arg Trp Asn Lys E--> 357 165 E--> 358 175 360 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 361 180 E--> 362 190 364 :210> SEQ 1D NO: 9 365 | 211> LENGTH: 192 366 <212> TYPE: PRT 367 <213> ORGANISM: Artificial Sequence 369 <220> FEATURE: 370 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 372 <400> SEQUENCE: 9 373 Met Glu Asn Arg Trp Gln Val Met Tle Val Trp Gln Val Asp Arg Met E--> 374 1 E--> 375 15 Same 377 Arg Ile Arg Thr Trp Asn Ser Leu Val Lys Tyr His Met Tyr Arg Ser E--> 378 E--> 379 30 381 Lys Lys Ala Arq Glu Trp Phe Tyr Arg His His Tyr Gln Ser Pro His 35 384 Pro Lys Val Ser Ser Glu Val His Tle Pro Leu Glu Asp Ala Arg Leu E--> 385 50 55 60 387 Val Ile Thr Thr Tyr Trp Gly Leu His Thr Gly Glu Arg Asp Trp His E--> 388 65 E--> 389 80 391 Leu Gly Gln Gly Val Ser Tie Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 392 E--> 393 95 395 His Val Asp Pro Asp Leu Ala Asp Gln Leu Ile His Leu Tyr Tyr Phe E--> 396 100 E--> 397 110 399 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly His Arg 115 125 402 Val Ser Pro Arg Cys Glu Tyr Arg Ala Gly His Ser Lys Val Gly Ser -> 403 130 135 405 Leu Gln Tyr Leu Ala Ile Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 406 145 150 E--> 407 160 409 Pro Pro Leu Ala Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 410 165 E--> 411 175 413 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 414 180 E--> 415 190 417 <210> SEQ ID NO: 10 418 <211> LENGTH: 192

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 RAW SEQUENCE LISTING
 DATE: 11/16/2000

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 TIME: 16:24:01
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Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

E--> 488 45 490 Pro Lys Val Ser Ser Glu Val His Ile Pro Leu Glu Asp Ala Arg Leu 55 E--> 491 50 60 493 Val lie Thr Thr Phe Trp Gly Leu His Thr Gly Glu Arg Asp Trp His -> 494 65 E--> 495 80 497 Leu Gly Glm Gly Val Ser 1le Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 498 E--> 499 95 501 His Val Asp Pro Asp Leu Ala Asp Gln Leu 11e His Leu Tyr Tyr Phe 100 E--> 502 E--> 503 110 505 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly His Arg 125 E--> 506 115 120 508 Val Ser Pro Arg Cys Glu Tyr Arg Ala Gly His Ser Lys Val Gly Ser E--> 509 130 135 140 511 Leu Gln Tyr Leu Ala Ile Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 512 145 150 E--> 513 160 515 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys 165 E--> 517 175 519 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 520 180 E--> 521 190 523 <210> SEQ ID NO: 12 524 <211> LENGTH: 192 525 \212> TYPE: PRT 526 <213> ORGANISM: Artificial Sequence 528 <220> FEATURE: some 529 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 531 <400> SEQUENCE: 12 532 Met Glu Asn Arg Trp Gln Val Met Ile Val Trp Gln Val Asp Arg Met E--> 533 1 E--> 534 15 536 Arg Ile Arg Thr Trp Asn Ser Leu Val Lys Tyr His Met Tyr Arg Ser E--> 537 2.0 E--> 538 30 540 Lys Lys Ala Arg Glu Trp Phe Asn Arg His His Tyr His Arg Pro His E--> 541 35 45 40 543 Pro Lys Val Ser Ser Glu Val His Ile Pro Leu Glu Asp Ala Arg Leu -> 544 50 55 60 546 Glu Ile Thr Thr Phe Trp Gly Leu His Thr Gly Glu Arg Asp Trp His E--> 547 65 E--> 548 80 550 Leu Gly Gln Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 551 E--> 552 95 554 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Ele His Leu Tyr Tyr Phe

Imput Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

E--> 555 E--> 556 110 558 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly His Arg same E--> 559 115 120 125 561 Val Ser Pro Arg Cys Glu Tyr Arg Ala Gly His Ser Lys Val Gly Ser E--> 562 130 135 140 $564~{\rm Leu}$ Gln Tyr Leu Ala He Ala Ala Leu He Thr Pro Lys Lys He Lys E--> 565 145 150 E--> 566 160 568 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 569 165 E--> 570 175 572 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asu Gly His 180 E--> 573 E--> 574 190 576 <210> SEQ 1D NO: 13 577 <211> LENGTH: 192 578 <212> TYPE: PRT 579 <213> ORGANISM: Artificial Sequence 581 <220> FEATURE: 582 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 584 <400> SEQUENCE: 13 585 Met Glu Asn Arg Trp Gln Val Met Ile Val Trp Gln Val Asp Arg Met E--> 586 1 E--> 587 15 589 Arg Ile Arg Thr Trp Asn Ser Leu Val Lys Tyr His Met Tyr Arg Ser E--> 590 20 E--> 591 30 593 Gln Lys Glu Arg Glu Trp Phe Asn Arg His His Tyr His Ser Pro His 45 35 som 596 Pro Glu Gln Ser Scr Thr Ala His Tle Pro Leu Val Asp Gly Arg Leu E--> 597 50 60 55 599 Glu Lys Ile Ala Val Trp Ser Leu Asp Thr Gly Glu Gly Val Trp His 70 E--> 600 65 E--> 601 80 603 Arg Gly His Arg Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 604 8.5 E--> 605 95 607 Gln Val Asp Pro Asp Leu Val Asp Gln Leu Ile His Leu Tyr Tyr Phe E--> 608 100 E--> 609 110 611 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly His Arg 125 115 614 Val Ser Pro Arg Cys Glu Tyr Arg Ala Gly His Ser Lys Val Gly Ser 140 E--> 615 130 135 617 Leu Gln Tyr Leu Ala Ile Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 618 145 150 E--> 619 160 621 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys

DATE: 11/16/2000 TIME: 16:24:01 PATENT APPLICATION: US/09/486,625 Input Set : A:\PTO.txt Output Set: N:\CRF3\11162000\I486625.raw E--> 622 E--> 623 175 625 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 626 180 E--> 627 190 629 <210> SEQ ID NO: 14 630 <211> LENGTH: 192 631 <212> TYPE: PRT 632 <213> ORGANISM: Artificial Sequence 634 <220> FEATURE: 635 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 637 <400> SEQUENCE: 14 638 Met Glu Asn Arg Trp Gln Val Met 11e Val Trp Gln Val Asp Arg Met E--> 639 E--> 640 15 642 arg Ile Arg Thr Trp Asn Ser Leu Val Lys His His Met Tyr Val Ser E--> 643 E--> 644 30 646 Lys Lys Ala Lys Lys Trp Phe Tyr Arg His His Tyr Glu Ser Pro His E--> 647 35 45 649 Pro Lys Val Ser Ser Thr Ala His 11e Pro Leu Gly Asp Gly Arg Leu 60 E--> 650 50 5.5 652 Glu Lys Thr Ala Val Trp Ser Leu Gln Ala Gly Asp Gly Val Trp His E--> 653 65 70 E--> 654 80 656 Arg Gly His Pro Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 657 85 E--> 658 95 660 Gln Val Asp Pro Asp Leu Val Asp Gln Leu Ile His Leu Tyr Tyr Phe E--> 661 E--> 662 110 664 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly Tyr Arg 115 125 667 Val Ser Pro Arg Cys Glu Tyr Gln Ala Gly His Asn Lys Val Gly Ser E--> 668 130 140 1.35 670 Leu Gln Tyr Leu Ala Leu Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 671 145 E--> 672 160 674 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 675 165 E--> 676 175 $678\ \text{Pro}\ \text{Gln}\ \text{Lys}\ \text{Thr}\ \text{Lys}\ \text{Gly}\ \text{His}\ \text{Arg}\ \text{Gly}\ \text{Ser}\ \text{His}\ \text{Thr}\ \text{Met}\ \text{Asn}\ \text{Gly}\ \text{His}$ E--> 679 180 E--> 680 190 683 <210> SEQ ID NO: 15 684 <211> LENGTH: 191

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Output Set: N:\CRF3\11162000\1486625.raw

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DATE: 11/16/2000 RAW SEQUENCE LISTING PATENT APPLICATION: US/09/486,625 FIME: 16:24:01

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

757 Pro Asn Val Ser Ser Glu V.1 His Ile Pro Leu Gly Asp Ala Arg Leu E--> 758 50 55 760 Val Thr Thr Pro Tyr Trp Gly Leu His Gly Gly Glu Arg Asp Trp Tyr E--> 761 65 70 E--> 762 80 764 Leu Ala Gin Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 765 8.5 some 768 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Ile His Leu Tyr Tyr Phe E--> 769 100 E--> 770 110 772 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly Tyr Arg 115 125 775 Val Ser Pro Arg Cys Glu Tyr Gln Ala Gly His Asn Lys Val Gly Ser 140 -> 776 130 1.3.5 778 Leu Gln Tyr Leu Ala Leu Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 779 145 E--> 780 160 782 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 783 165 E--> 784 175 786 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 787 180 E--> 788 190 790 <210> SEQ 1D NO: 17 791 <211> LENGTH: 192 792 < 212> TYPE: PRT 793 <213> ORGANISM: Artificial Sequence 795 <220> FEATURE: 796 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 798 <400> SEQUENCE: 17 799 Net Glu Asn Arg Trp Glu Val Met Ile Val Trp Glu Val Asp Arg Met Same E--> 800 1 E--> 801 15 803 Arg Ile Arg Ala Trp Asn Ser Leu Val Lys His His Met Tyr Val Ser E--> 804 E--> 805 30 807 Lys Lys Ala Lys Lys Trp Phe Tyr Arg His His Tyr Glu Ser Pro His 810 Pro Lys Val Ser Ser Glu Val His Tle Pro Len Gly Asp Ala Arg Leu E--> 811 50 55 60 813 Val Ile Thr Thr Tyr Trp Gly Leu His Ala Gly Glu Arg Asp Trp His E--> 814 65 E--> 815 80 817 Leu Gly Gln Gly Val Ser 11e Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 818 E--> 819 95 821 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Ile His Leu Tyr Tyr Phe 100 105

 RAW SEQUENCE LISTING
 DATE: 11/16/2000

 PATENT APPLICATION:
 US/09/486,625
 PIME: 16:24:01

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

E--> 823 110 825 Asp Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly Tyr Arg 125 E--> 826 115 120 828 Val Ser Pro Arg Cys Glu Tyr Gln Ala Gly His Asn Lys Val Gly Ser yand -> 829 130 135 831 Leu Gli Tyr Leu Ala Leu Ala Leu Ile Thr Pro Lys Lys ile Lys 150 E--> 832 145 E--> 833 160 835 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 836 165 170 E--> 837 175 839 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 840 180 E--> 841 190 843 <210> SEQ ID NO: 18 844 <211> LENGTH: 192 845 <212> TYPE: PRT 846 <213> ORGANISM: Artificial Sequence 848 <220> FEATURE: 849 <223> OTHER INFORMATI :: Description of Artificial Sequence: Novel Sequence E--> 851 <400> SEQUENCE: 17 852 Het Glu Asn Arg Trp Gln Val Met Ile Val Trp Gln Val Asp Arg Met E--> 853 1 sand E--> 854 15 856 Arg Ile Arg Ala Trp Asn Ser Leu Val Lys His His Met Tyr Val Ser E--> 857 E--> 858 30 860 Lys Asn Ala Lys Lys Trp Phe Tyr Arg His His Tyr Asp Ser Pro His 35 863 Pro Val Gin Ser Ser Thr Ala His Ile Pro Leu Gly Asp Gly Arg Leu -> 864 50 55 866 Gln Lys Ile Ala Phe Trp Ser Leu Asp Ala Gly Glu Arg Asp Trp His E--> 867 65 70 870 Leu Gly Gin Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 871 85 E--> 872 95 874 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Ile His Leu Tyr Tyr Phe E--> 875 E--> 876 110 878 Asp Cys Phe Ser Glu Ser Ala Tle Arg Lys Ala lle Leu Gly Tyr Arg 115 120 125 881 Val Ser Pro Arg Cys Glu Tyr Gln Ala Gly His Asn Lys Val Gly. Ser E--> 882 130 135 884 Leu Gln Tyr Leu Ala Leu Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 885 145 150 E--> 886 160 888 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys 165

Input Set : A:\PTO.txt Output Set: N:\CRF3\11162000\1486625.raw E--> 890 175 892 Pro Gln Lys Thr Lys Gly His Arg Gly Arg His Thr Met Asn Gly His E--> 893 180 E--> 894 190 896 <210> SEQ ID NO: 19 897 <211> LENGTH: 192 898 <212> FYPE: PRT 899 <213> ORGANTSM: Artificial Sequence 901 <220> FEATURE: 902 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 904 <400> SEQUENCE: 19 905 Met Glu Asn Arg Trp Gln Val Met 11e Val Trp Gln Val Asp Arg Met E--> 907 15 909 Arg Ile Arg Ala Trp Asn Ser Leu Val Lys His His Met Tyr Val Ser E--> 910 20 E--> 911 30 913 Lys Lys Ala Lys Lys Trp Phe Tyr Arg His His Tyr Asp Ser Pro His 45 3.5 E--> 914 40 916 Pro Lys Val Ser Ser Glu Val His Ile Pro Leu Gly Asp Ala Arg Leu > 917 50 55 919 Glu Thr Thr Tyr Trp Gly Leu His Ala Gly Glu Arg Asp Trp His E--> 920 65 70 E--> 921 80 923 Leu Gly Gln Glv Val Ser 11e Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 925 95 927 His Val Asp Pro Asp Leu Ala Asp Gln Leu Tle His Leu Tyr Tyr Phe E--> 928 100 E--> 929 110 931 Asp Cvs Phe Ser Glu Ser Ala ile Arg Lys Ala ile Leu Gly Tyr Arg 125 E--> 932 115 934 Val Ser Pro Arg Cys Glu Tyr Gln Ala Gly His Asn Lys Val Gly Ser E--> 935 130 135 140 937 Leu Gln Tyr Leu Ala Leu Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 938 145 150 E--> 939 160 941 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 943 175 945 Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn Gly His E--> 946 180 E--> 947 190 949 <210> SEQ TD NO: 20 950 <211> LENGTH: 192 951 <212> TYPE: PRT

955 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/486,625

DATE: 11/16/2000

TIME: 16:24:01

some

952 <213> ORGANISM: Artificial Sequence

954 <220> FEATURE:

DATE: 11/16/2000 TIME: 16:24:01 RAW SEQUENCE LISTING PATENT APPLICATION: US/09/486,625

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\I486625.raw

957 <400> SEQUENCE: 20 958 Met. Glu Asn Arg irp Gln Val Met Ile Val Trp Gln Val Asp Arg Met E--> 959 1 E--> 960 15 962 Thr 1le Arg Ala Trp Asn Ser Lou Val Lys His His Met Tyr Val Ser E--> 963 20 E--> 964 30 966 Lys Lys Ala Lys Lys Trp Phe Tyr Arg His His Tyr Glu Ser Pro His 35 969 Pro Lys Val Ser Ser Glu Val His Ile Pro Leu Gly Asp Ala Arg Leu E--> 970 50 60 5.5 972 Val Ile Thr Thr Tyr Trp Gly Leu His Ala Gly Glu Arg Asp Trp His E--> 973 65 70 E--> 974 80 976 Leu Gl; Gln Gly Val Ser He Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 977 85 980 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Thr His Leu Tyr Tyr Phe 100 E--> 981 E--> 982 110 984 Asp Cys Phe Ser Glu Ser Ala Tle Arg Lys Ala Ile Leu Gly Tyr Arg 115 125 987 Val Ser Pro Arg Cys Glu Tyr Gln Ala Gly His Asn Lys Val Gly Ser E--> 988 130 140 135 990 Leu Gln Tyr Leu Ala Leu Ala Ala Leu Ile Thr Pro Lys Ile Lys E--> 992 160 994 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp ℓ .sn Lys E--> 995 165 998 Pro Gin Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asm Gly His E--> 999 180 E--> 1000 190 1002 <210> SEQ ID NO: 21 1003 <211> LENGTH: 188 1004 <212> TYPE: PRT 1005 <213> ORGANISM: Artificial Sequence 1007 <220> FEATURE: 1008 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 1010 <400> SEQUENCE: 21 1011 Met Glu Asn Arg 1rp Gln Val Met Ile Val Trp Gln Val Asp Arg Met E--> 1012 1 E--> 1013 15 1015 Arg Ile Arg Ala Trp Asn Ser Leu Val Lys His His Met Tyr Val Ser E--> 1016 20 E--> 1017 30 1019 Lys Lys Ala Lys Lys Trp Phe Asn Arg His His Tyr Asp Arg Pro His

same

45

pand

35

1022 Pro Lys Val Ser Ser Glu Val His lle Pro Leu Gly Asp Ala Arg Leu

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

E--> 1023 50 1025 Glu lle Thr Thr Phe Trp Gly Leu His Ala Gly Glu Arg Asp Trp His E--> 1026 65 70 E--> 1027 80 1029 Leu Gly Gln Arg Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 1030 85 E--> 1031 95 March 1033 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Thr His Leu Tyr Tyr Phe E--> 1034 1.00 E--> 1035 110 1037 Asp C/s Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly Tyr Arg 125 1010 Val Ser Pro Arg Cys Glu Tyr Gln Ala Gly His Asn Lys Val Gly Ser 140 E--> 1041 130 135 1043 Leu Gln Tyr Leu Ala Leu Ala Ala Leu Ile Thr Pro Lys Lys Ile Lys E--> 1044 145 150 E--> 1045 160 1047 Pro Pro Leu Pro Ser Val Arg Lys Leu Thr Glu Asp Arg Trp Asn Lys E--> 1048165 E--> 1049 175 1051 Pro Gln Lys Thr Lys Gly Thr Glu Gly Ala Ile Gln 185 E--> 1052 180 1055 -210> SEQ ID NO: 22 1056 <211> LLNGTH: 192 1057 <212> TYPE: PRT 1058 <213> ORGANISM: Artificial Sequence 1060 :220> FEATURE: 1061 <223> OTHER INFORMATION: Description of Artificial Sequence: Novel Sequence 1063 <400> SEQUENCE: 22 1064 Met Glu Asn Arg Trp Gln Val Met 11e Val Trp Gln Val Asp Arg Met E--> 1065 1 E--> 1066 15 1068 Arg Ile Arg Ala Trp Asn Ser Leu Val Lys His His Met Phe Val Ser E--> 1069 E--> 1070 30 1072 Lys Lys Ala Lys Lys Trp Phe Tyr Arg His His Tyr Glu Ser Pro His E--> 1073 35 1075 Pro Lys Val Ser Ser Glu Val His Ile Pro Leu Gly Asp Ala Arg Leu 1078 Glu Ile Thr Thr Phe Trp Gly Leu His Ala Gly Glu Arg Asp Trp His -> 1079 65 70 E--> 1080 80 1082 Leu Gly Gln Gly Val Ser Ile Glu Trp Arg Lys Arg Arg Tyr Ser Thr E--> 1083 E--> 1084 95 1086 Gln Val Asp Pro Asp Leu Ala Asp Gln Leu Ile His Leu Tyr Tyr Phe E--> 1087 100 E--> 1088 110 1090 Gly Cys Phe Ser Glu Ser Ala Ile Arg Lys Ala Ile Leu Gly Tyr Arg

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

E>	1001	115							120								125	,		
E/	1091		115										120				125	/		
	1093	Val	ser	Pro	Arg	Cys	Glu	Tyr	Gln	Ala	Cly	His	Asn	Lys	Val	Gly	ser		1/	
E>	1094	130								135								140	4/1/2	
	1096	Leu	G l.n	Tyr	Leu	Cly	Leu	Ala	Ala	Leu	116	Thr	Pro	Lys	Lys	11e	Lys		N	
E>	1097	145	145 150														155		/V	
E>	1098	160																	/*	
	1100	Pro	Pro	Leu	Pro	Ser	Va L	Arg	Lys	Leu	Thr	Glu	Asp	Arg	Trp	Asn	Lys			
E>	1101	165							65	170										
E>	1102	175																		
	1104	Pro	Gln	Lys	Thr	Lys	Gly	His	Arg	Gly	Ser	His	Thr	Met	Asn	Gly	His			
E>	1105						180								185					
E>	1106	190																		

FYI:

The types of errors shown exist throughout the Sequence Listing. Please check subsequent sequences for similar errors.

 VERIFICATION SUMMARY
 DATE: 11/16/2000

 PATENT APPLICATION: US/09/486,625
 11ME: 16:24:02

Input Set : A:\PTO.txt

Output Set: N:\CRF3\11162000\1486625.raw

L:14 M:270 C: Current Application Number differs, Replaced Current Application Number L:15 M:271 C: Current Filing Date differs, Replaced Current Filing Date L:3! M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:1 M:332 Repeated in SeqNo 1 L:108 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:4 M:332 Repeated in SeqNo 4 L:162 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:5 M:332 Repeated in SeqNo 5 L:215 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:6 M:332 Repeated in SeqNo.6 L:268 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:7 M:332 Repeated in SeqNo=7 L:321 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:8 M:332 Repeated in SeqNo 8 L:374 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:9 M:332 Repeated in SeqNo:9 L:427 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:10 M:332 Repeated in SeqNo-10 L:480 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:11 M:332 Repeated in SeqNo=11 L:533 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ [D:12 M:332 Repeated in SeqNo-12 L:586 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:13 M:332 Repeated in SeqNo=13 L:639 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:14 M:332 Repeated in SeqNo-14 L:693 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:15 M:332 Repeated in SeqNo=15 L:747 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:16 M:332 Repeated in SeqNo-16 L:800 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:17 M:332 Repeated in SeqNo=17 L:851 M:212 E: (34) Invalid or duplicate Sequence ID Number, SEQUENCE ID NOS:18 differs:17 L:853 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ 1D:17 M:332 Repeated in SeqNo-18 L:906 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:19 M:332 Repeated in SeqNo-19 1.:959 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:20 M:332 Repeated in SeqNo-20 L:1012 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:21 M:332 Repeated in SeqNo=21 L:1065 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:22 M:332 Repeated in SeqNo-22 L:1118 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ TD:23 M:332 Repeated in SeqNo-23 L:1171 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:24 L:1183 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:25 L:1195 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:26